



STATE OF NEW YORK
CONSERVATION DEPARTMENT
WATER RESOURCES COMMISSION

FLOODS IN NEW YORK-1967

By

F. L. ROBISON
U.S. GEOLOGICAL SURVEY

REPORT OF INVESTIGATION
RI-3
1969

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RI-3

Prepared by
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

in cooperation with
NEW YORK STATE DEPARTMENT OF TRANSPORTATION and
NEW YORK STATE WATER RESOURCES COMMISSION

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FLOODS IN NEW YORK-1967

By

F. L. Robison 1/

INTRODUCTION

This report presents information on floods reported in New York State during the calendar year 1967. It was prepared at the request of the New York State Department of Transportation in accordance with the provisions of an agreement between the New York State Division of Water Resources and the U.S. Geological Survey for a cooperative statewide program to investigate the water resources of the State.

The report was compiled in the New York District, Water Resources Division, U.S. Geological Survey, under the direction of Garald G. Parker, District Hydrologist. The information was obtained from newspaper clippings, the U.S. Weather Bureau publications, "Storm Data and Unusual Weather Phenomena, 1967" and "Daily Precipitation Records," and from records of the U.S. Geological Survey.

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OUTSTANDING FLOODS, WESTERN NEW YORK, SEPTEMBER 27-29

Although damage from floods in the State for most of the year were minor, one flood in 1967 will long be remembered. During September 27-29, a record-breaking rainfall in the western third of the State caused flooding of many streams and widespread damage to public and private property.

During the afternoon of the 27th, rain began and continued until early morning on the 29th. Maximum official rainfall measurement for the storm was 6.54 inches observed near the village of Friendship in Allegany County; an unofficial measurement of 8.0 inches was reported nearby. Technical paper no. 40, "Rainfall Frequency Atlas of the United States," ^{1/} published by the U.S. Weather Bureau, indicates that a rainfall of 5 inches in 24 hours in this area can be expected on the average only once in 100 years. The 6.54 inches in 28 hours at Friendship is well over the 100-year recurrence figure. A new September 24-hour record was established at Buffalo with 3.63 inches on the 27th-28th. The extent and distribution of the rainfall is shown on the isohyetal map, figure 1. This figure also includes a list of rainfall measurements at indicated sites.

Streams in the area of heavy precipitation rose rapidly. Stages on the Allegheny River and its tributaries approached or exceeded record heights and flooded buildings, fields, and highways. The Allegheny River at Salamanca was only slightly below the maximum height reached in the 1956 flood while many smaller streams set new records. Great Valley Creek near Salamanca reached a stage more than 7 feet above the previous maximum peak of 10.7 feet set in 1956, and the discharge was nearly triple that of the greatest flood previously known on this stream.

Figure 2 shows sites where damage from floods was reported in the storm of September 27-29. The sources of the damage reports are included in the section "Descriptions of Floods."

Many families were evacuated from their homes in the city of Salamanca and in the villages of Friendship and Ellicottville.

A teenage boy from Little Valley was drowned when overflowing Great Valley Creek washed his car from Route 219. A man from Colden lost his life when his car went into Cazenovia Creek where the road had been washed away. Rescues by boat prevented what might have been other fatalities.

Flooding in Olean and other communities, protected by flood walls and dikes, was due mostly to overloaded sewers and ditches. Damages were light.

Although the damage inflicted on private homes was serious to the individuals affected, the greatest monetary losses occurred to highways, bridges, and other public facilities. In Cattaraugus County, 9 county

^{1/} U.S. Dept. of Commerce, Weather Bureau, 1961, Rainfall Frequency Atlas of the United States for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years: Technical Paper no. 1, 61 p.

bridges were destroyed and 19 were damaged. One State bridge and a B & O Railroad bridge needed extensive repairs. In Allegany County six bridges were damaged.

Reported estimates of damages to public facilities in Cattaraugus County exceeded \$1,250,000 and in Allegany County were nearly \$600,000. When added to the loss of crops, farmland, and damage to privately owned buildings, the total damage caused by the flood may be several millions of dollars.

Cattaraugus County was declared a disaster area by the U.S. Small Business Administration, thus allowing businessmen and other victims of flood damages to borrow money at 3 percent interest for up to 30 years. Allegany and Cattaraugus Counties were also declared major disaster areas by President Johnson and \$525,000 was allocated for emergency repairs to public facilities.

The Pittsburgh office of the U.S. Army Corps of Engineers estimated the total damages in the city of Salamanca at \$293,000. Another item of expense, caused by the large amount of debris deposited in the streams, was estimated at \$50,000 for clearing of streambeds in the Allegheny River drainage basin in New York.

Figure 3 contains a stage hydrograph for Van Campen Creek at Friendship, N. Y. This graph illustrates the effect of timing on flood magnitudes at a specific site. The water that flows past this gaging station is mainly contributed by three tributaries -- North, West, and South Branches of Van Campen Creek. When the first surge of water reached the gaging station, the stage or surface level of the stream rose about 7 1/2 feet and then receded sharply some 3 1/2 feet. When the second surge arrived, the stage again rose until it was about half a foot higher than the first peak.

Because there are no water-stage recorders on the separate branches of the stream, we do not know the timing of the peak discharges of the three branches. However, we can assume that the recorded maximum stage at the gaging station would have been higher and the flood damage much more severe if the peaks of the three branches had arrived at the gaging station at the same time.

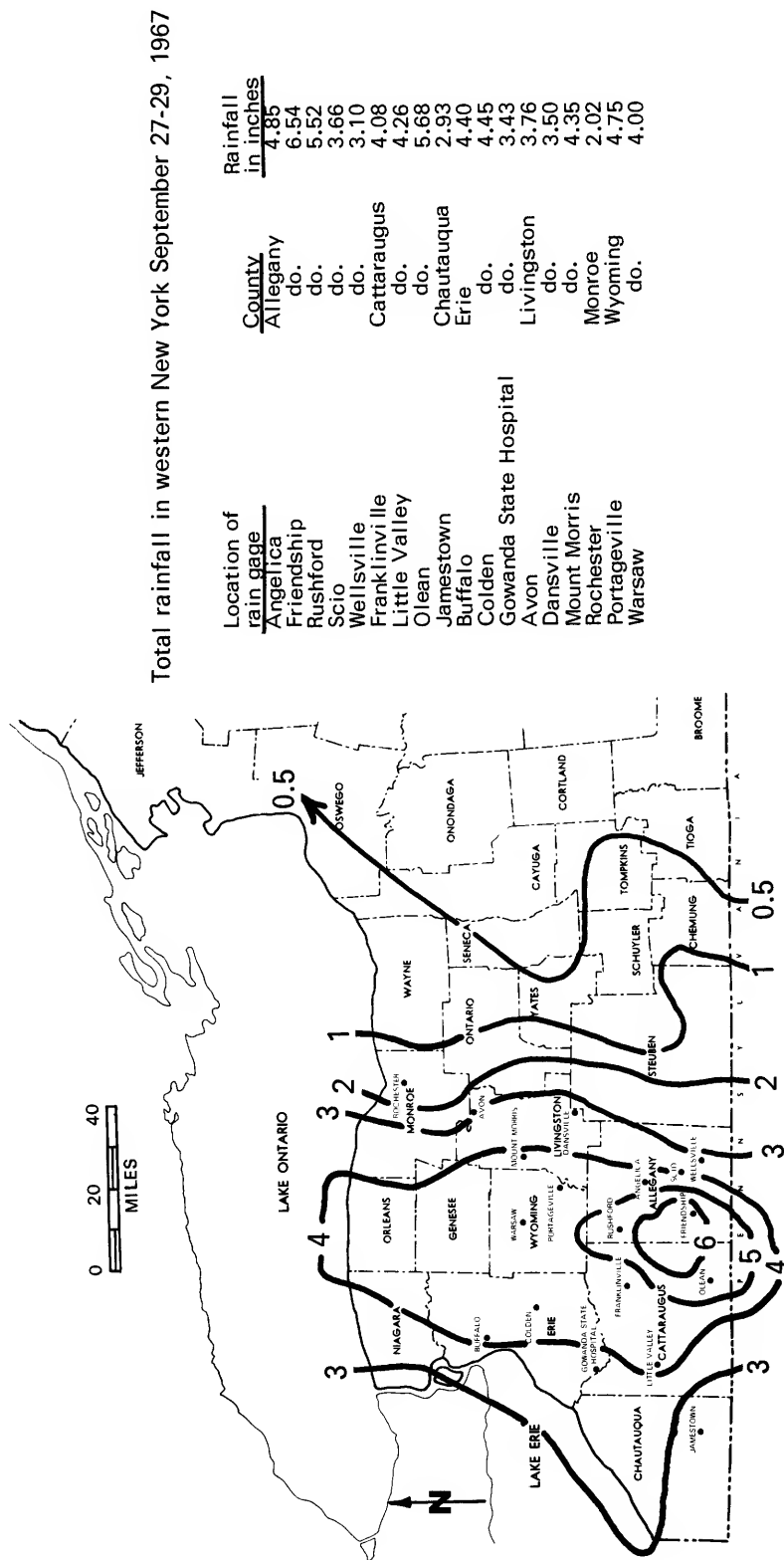
Also shown in figure 3 are stage hydrographs for Olean Creek near Olean and for Allegheny River at Salamanca. The more gradual slopes of recession shown on the latter two graphs reflect the effect of their larger drainage area.

Table 1 contains peak discharges for many streams in the flood area with corresponding maximum peaks of record prior to September 27, for comparison. Data for some of the September flood peaks were obtained from records at U.S. Geological Survey gaging stations while others are the results of indirect measurements of peak discharge made after the flood by engineers of the U.S. Geological Survey. Figure 4 shows sites where flood discharges were determined.

SUMMARY OF OTHER FLOODS

Except during the period September 27-29, flood damages in 1967 were caused mostly by flooding of streets and basements. There were no reports of ice-jam flooding, no serious problems from the usual spring breakup, and no floods resulting from hurricanes. Several thunderstorms and rain-showers with measured amounts of 2 to 4 inches were reported but the damages were light. A large proportion of the reports concerning this type of flooding came from the Long Island-New York City area. This southeastern part of the State was the origin of the reports in 6 of the 10 months in which flooding occurred. One unusual accident caused the death by drowning of a woman in the flooded yard of her home on Staten Island. Sites where damage from flooding was reported in 1967, excepting the floods of September 27-29, are shown in figure 5.

During the entire year 1967, except for the September 27-29 period, the peak discharge exceeded the previously known maximum at only one U.S. Geological Survey gaging station. At the station on Carlls River at Babylon, Long Island, a new maximum was recorded on June 23. The discharge of 193 cubic feet per second is 10 percent higher than the previous maximum at this site.



Total rainfall in western New York September 27-29, 1967

Location of rain gage	County	Rainfall in inches
Angelica	Allegany	4.85
Friendship	do.	6.54
Rushford	do.	5.52
Scio	do.	3.66
Wellsville	do.	3.10
Franklinville	Cattaraugus	4.08
Little Valley	do.	4.26
Olean	do.	5.68
Jamestown	Chautauqua	2.93
Buffalo	Erie	4.40
Colden	do.	4.45
Gowanda State Hospital	do.	3.43
Avon	Livingston	3.76
Dansville	do.	3.50
Mount Morris	do.	4.35
Rochester	Monroe	2.02
Portageville	Wyoming	4.75
Warsaw	do.	4.00

Figure 1.--Isohyetal map showing precipitation, in inches, and listing storm rainfall, September 27-29, 1967, in western New York.

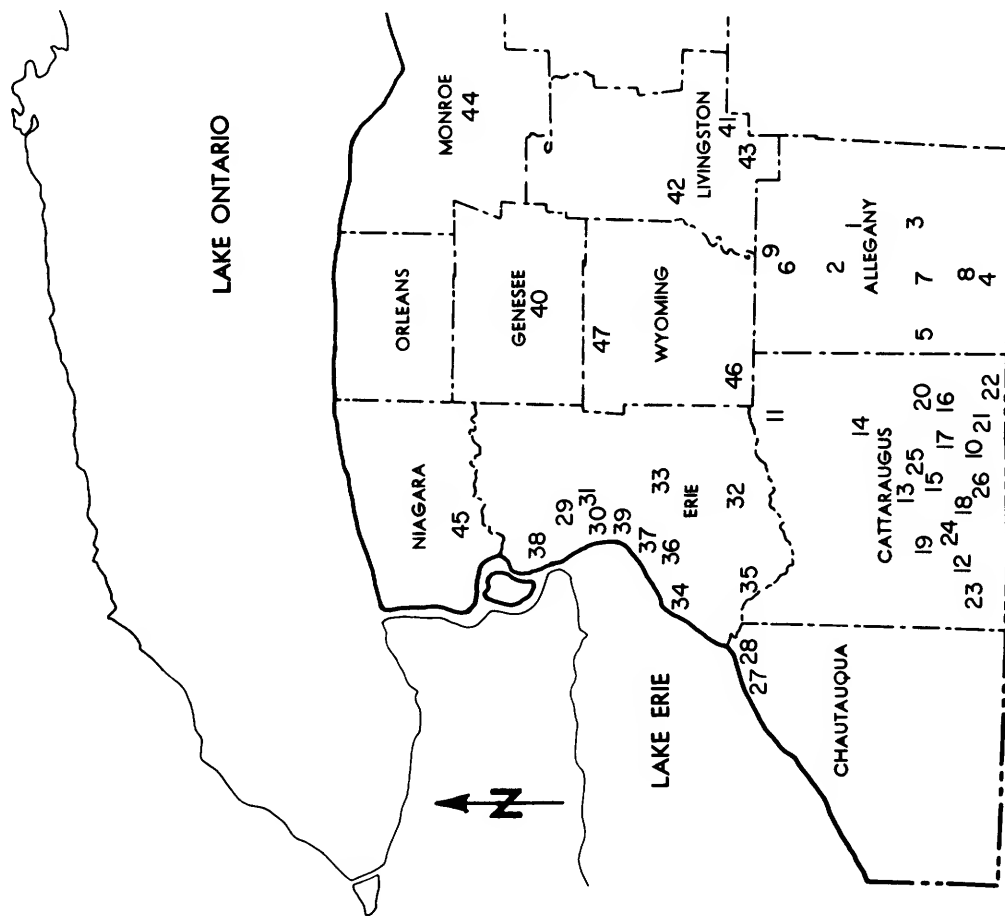


Figure 2.--Sites in western New York where flood damage from the storm of September 27-29, 1967, was reported.

- | | |
|--------------------|-----------------------|
| Allegany County | Erie County |
| 1. Angelica | 29. Amherst |
| 2. Belfast | 30. Buffalo |
| 3. Belmont | 31. Cheektowaga |
| 4. Bolivar | 32. Colden |
| 5. Cuba | 33. East Aurora |
| 6. Fillmore | 34. Evans |
| 7. Friendship | 35. Gowanda |
| 8. Richburg | 36. Hamburg |
| 9. Rossburg | 37. Orchard Park |
| Cattaraugus County | 38. Tonawanda |
| 10. Allegany | 39. West Seneca |
| 11. Delevan | Genesee County |
| 12. East Randolph | 40. Batavia |
| 13. Ellicottville | Livingston County |
| 14. Franklinville | 41. Dansville |
| 15. Great Valley | 42. Mount Morris Dam |
| 16. Hinsdale | 43. Ossian |
| 17. Humphrey | Monroe County |
| 18. Killbuck | 44. Greater Rochester |
| 19. Little Valley | Niagara County |
| 20. Maplehurst | 45. Lockport |
| 21. Olean | Wyoming County |
| 22. Portville | 46. Arcade |
| 23. Randolph | 47. Attica |
| 24. Salamanca | |
| 25. Sugar Town | |
| 26. Vandalia | |
| Chautauque County | |
| 27. Silver Creek | |
| 28. Sunset Bay | |

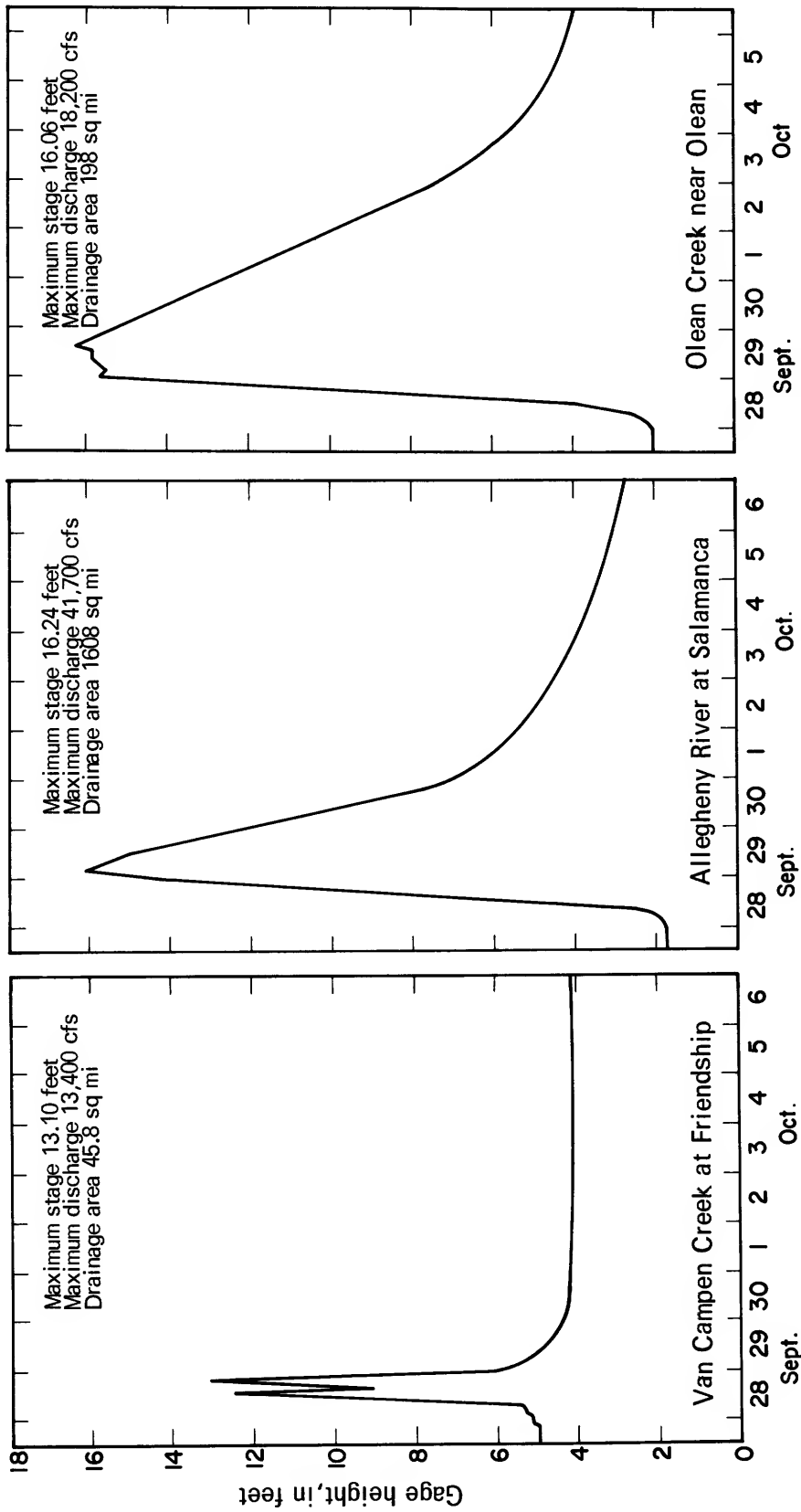


Figure 3.--Stage hydrographs for selected streams, September 27-October 2, 1967.

Table 1.--Flood stages and discharges in western New York, September 27-30, 1967

Stream and place of determination (numbers refer to figure 4)	Drainage area (sq mi)	Period of record	Maximum flood previously known					Maximum September 27-30, 1967			Recurrence interval (years)
			Date	Gage height (ft)	Discharge (cfs)	Discharge (cfs/sq mi)	Date	Gage height (ft)	Discharge (cfs)	Discharge (cfs/sq mi)	
Allegheny River basin											
1. Gates Creek at Franklinville	19.3	--	--	--	--	--	9/28	--	4,880	253	a/ 1.2
2. Johnsons Creek at Cuba	2.10	--	--	--	--	--	9/28	--	632	301	23
3. Olean Creek near Olean	198	1957-67	2/26/61 3/29/50	12.76	7,540 16,100	38.1 81.3	9/29	16.06	18,200	91.9	23
4. Fivemile Creek near Allegheny	34.1	--	--	--	--	--	9/28	--	3,840	113	7
5. Wrights Creek at Willoughby	30.2	--	--	--	--	--	9/28	--	9,370	310	a/ 1.7
6. Great Valley Creek near Salamanca	137 139	1950-67	3/ 7/56	10.66	9,680	--	9/28	17.88	28,600 28,900	209 208	a/ 1.8
7. Allegheny River at Salamanca b/	1,608	1903-67	3/ 8/56	15.11	49,100	30.5	9/29	16.24	41,700	25.9	12
8. Conewango Creek at Waterboro	290	1938-67	4/ 7/47 3/ 8/56	11.35 11.58	8,600	29.7	9/30	8.37	2,500	8.62	--
Cattaraugus Creek basin											
9. Cattaraugus Creek near Arcade	78.4 74.6	1963-67	3/ 5/64	7.46	4,380	55.9	9/28	9.84	9,730 9,350	124 125	28
10. Elton Creek at the Forks	71.6	--	--	--	--	--	9/28	--	5,830	81.4	4
11. Cattaraugus Creek at Gowanda	432	1939-67	3/17/42	--	35,900	83.1	9/29	12.96	29,000	67.1	12
12. Eighteenmile Creek at North Boston	37.2	1963-67	3/ 5/64	8.83	3,010	80.9	9/28	12.5	5,110	137	22
13. Buffalo Creek near Wales Hollow	80.1	1963-67	3/ 5/64 3/ 5/64	8.57 8.75	4,430 ice jam	55.3	9/28	11.61	8,840	110	18
14. Buffalo Creek at Gardenville	144	1938-67	3/ 1/55 3/ 7/56 3/ 9/42	7.07 13,000 13,000 ice jam	90.3	90.3	9/29	8.50	10,500	72.9	--
15. Cayuga Creek near Lancaster	94.9	1938-67	1/22/59 3/30/60	10.09 12.58	8,750 ice jam	92.2	9/28	8.17	5,400	56.9	--
16. Cazenovia Creek at Ebenezer	134	1940-67	3/ 1/55	15.82	13,500	101	9/29	11.45	8,000	59.7	--
Niagara River basin											
17. Scajaquada Creek at Buffalo	15.9	1957-67	8/ 7/63	14.38	2,620	--	9/28	8.73	1,360	--	--

a/ Ratio of peak discharge to 50-year flood.

b/ Allegheny River at Salamanca prior to October 1964 water-stage recorder at site 7.5 miles downstream at different datum.

Table 1.--Flood stages and discharges in western New York, September 27-30, 1967 (Continued)

Stream and place of determination (numbers refer to figure 4)	Drainage area (sq mi)	Period of record	Maximum flood previously known					Maximum September 27-30, 1967				Recurrence interval (years)
			Date	Gage height (ft)	Discharge (cfs)	Discharge (cfs/sq mi)	Date	Gage height (ft)	Discharge (cfs)	Discharge (cfs/sq mi)		
18. Dyke Creek near Andover	37.8	1964-67	3/ 5/64	6.58	3,510	92.9	9/28	6.71	4,000	106	a/ 1.1	
19. Elm Valley Creek near Alfred	1.15	--	--	--	--	--	9/28	--	288	250	--	
20. Genesee River at Scio	308	1916-67	11/25/50	11.22	23,300	75.6	9/29	9.01	7,900	25.6	--	
21. Genesee River Tributary at Belmont	2.51	--	--	--	--	--	9/28	--	761	303	--	
22. Van Campen Creek at Friendship	45.8 49.4	1964-67	3/ 5/64	10.56	4,950	--	9/28	13.10	13,400 14,200	293 287	a/ 3.3	
23. Baker Creek at Belvidere	2.33	--	--	--	--	--	9/28	--	956	410	a/ 1.2	
24. Angelica Creek at Transit Bridge	86.5	1964-67	3/ 5/64	7.79	5,210	60.2	9/28	10.28	9,460	109	1.4	
25. Caneadea Creek at Caneadea	62.0	1949-67	6/15/60	10.74	9,600	155	9/28	13.09	13,800	5/	--	
26. Sixtown Creek Tributary near Centerville	1.67	--	--	--	--	--	9/28	--	201	120	--	
27. Genesee River at Portageville d/	1,017 981	1908-67	5/17/16 3/ 7/56	12.81 21.70	44,400 36,100	43.7 36.8	9/29	22.94	38,900	397	40	
28. Canaseraga Creek near Canaseraga	58.2	1964-67	3/ 5/64	7.69	2,980	51.2	9/28	11.10	5,480	94.2	a/ 1.1	
29. Canaseraga Creek near Dansville	153	1910-12, 1915-67	7/23/40	13.1	8,830	57.7	9/28	10.85	4,020	263	--	

a/ Ratio of peak discharge to 50-year flood.

5/ Regulated by Rushford Reservoir.

d/ Prior to October 1, 1946, water-stage recorder at site 8 miles downstream at different datum.

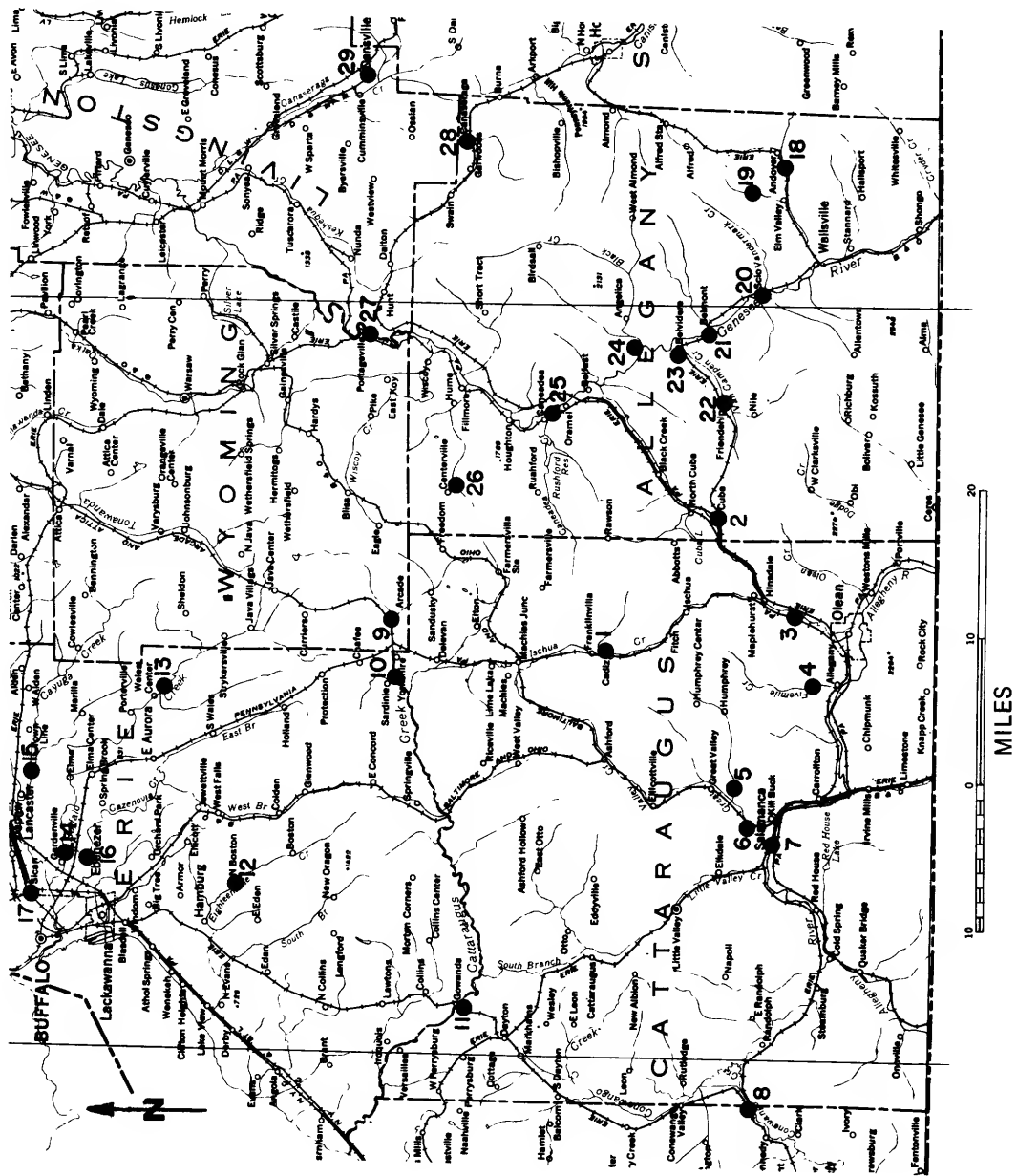
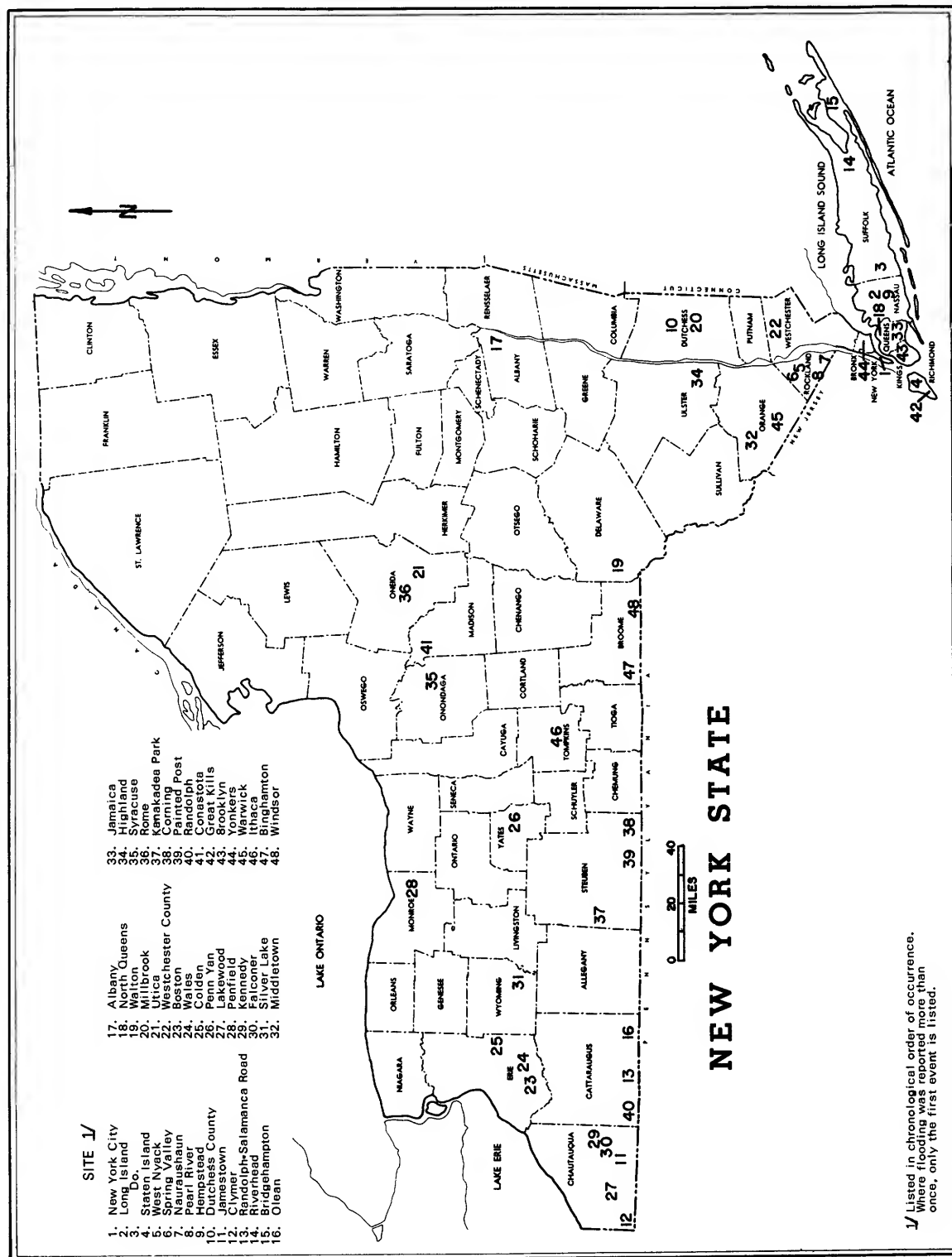


Figure 4.--Location of flood-determination points for floods of September 27-29, 1967, in western New York. (Numbers refer to table 1.)



DESCRIPTIONS OF FLOODS

The news items used in the following descriptions of floods were taken from the indicated publications with minor editing by the author.

March Floods

USWB STORM DATA AND UNUSUAL WEATHER PHENOMENA, March 6-7

General snowfall of 12 to 18 inches covered southeastern plateau, eastern Mohawk Valley and the Hudson Valley south to Orange and Putnam Counties. In the New York City and Long Island sections precipitation occurred as rain and totaled 3.0 to 3.5 inches. Extensive flooding resulted in damage to cars, basements, and other vulnerable structures. On Staten Island a 100-foot section of a large cement retaining wall collapsed after being undermined by the rain.

STATEN ISLAND ADVANCE, March 7

Rain this morning continued to erode the muddy backyard embankment in Dongan Hills where until yesterday a retaining wall protected several homes.

NYACK JOURNAL NEWS, March 7

Flooding came to West Nyack this morning as tons of water cascaded over the sluice gates at Lake DeForest dam, roared down and over the banks of the Hackensack River, and spread over some fields and roads.

There were many problems of flooding in low areas. Main street in Spring Valley was under curb-deep water, and there was highway flooding at the intersection of Sickletown Road and Veterans Memorial Drive in Nauraushaun and on North Pearl Street at Washington Avenue in Pearl River.

LONG ISLAND DAILY PRESS, March 8

Yesterday's 3-inch rainfall is expected to help ease the situation of Long Island's underground reservoirs (aquifers) but the heavy rain inconvenienced motorists and flooding made many roads hazardous or temporarily impassible in Nassau and Suffolk Counties.

NYACK JOURNAL NEWS, March 13

An earth dam on the former Nike missile base in the Hempstead area gave way Saturday, releasing a torrent of water which flooded land along Hempstead Road. Within an hour, 5 to 6 feet of water had drained from the pond, carrying with it large amounts of silt, rocks and debris, gouging an 8-foot channel, blocking the road, and washing out lawns and driveways.

NEWBURGH-BEACON NEWS, March 30

Some cellars in Dutchess County were reported to be flooded.

HUDSON REGISTER STAR, March 31

Many streams were reported out of their banks in Dutchess County, but there was only minor highway flooding.

April Floods

USWB STORM DATA AND UNUSUAL WEATHER PHENOMENA, April 17

A deluge of about 1.5 inches of rain in 1.5 hours fell on southern Chautauqua County, with heaviest damage centered in and around the city of Jamestown. Several blocks of the city were inundated with 2 feet of water, causing buckling and gouging of street paving, and blacktop. Excessive flooding of stores, warehouses, a shopping center, and an underpass occurred. About 75 acres of newly seeded oats and other crops were inundated at Clymer.

May Floods

BUFFALO EVENING NEWS, May 12

Route 17 between East Randolph and Salamanca was barricaded this afternoon after Allegheny Reservoir water lapped over long stretches of the highway as much as 30 miles upstream from the Kinzua Dam. The section of highway affected lies within the reservoir limits and will be abandoned when the new road is completed.

BUFFALO EVENING NEWS, May 15

Weekend rains sent the Allegheny Reservoir to record levels and closed a 15-mile stretch of Route 17 west of Salamanca for the second time in 4 days.

USWB STORM DATA AND UNUSUAL WEATHER PHENOMENA, May 24-26

A coastal storm approaching Long Island late on the 24th, deepened considerably on the 25th, and yielded from 2.0 to 3.0 inches of rain to the extreme eastern sections of the Island. Widespread flooding of agricultural land caused moderate losses to potato and vegetable crops in Riverhead and Bridgehampton areas of Suffolk County. High tides resulted in considerable beach erosion along southern and eastern shores of Long Island.

June Floods

JAMESTOWN POST JOURNAL, June 15

A brief but intense rainstorm yesterday afternoon caused minor street flooding in Olean when the storm sewers became overloaded.

ALBANY TIMES UNION, June 18

Washed out by torrents of rain during an early evening storm yesterday, a hill behind the Sons of Abraham Synagogue in Albany, turned into a river of slime. Moving swiftly it flowed over a concrete-block retaining wall, burst through two heavy wooden doors, and sent up to 3 feet of earth and water through the sanctuary and all other parts of the 2-year old building. The Sheridan Avenue parking lot was also flooded.

LONG ISLAND STAR JOURNAL, June 19

After 18 days of below normal rainfall for June, heavy thunderstorms dropped more than 2 inches of water in a few hours last night in North Queens flooding a few streets.

WALTON REPORTER, June 22

Numerous hard showers struck the Walton area during the past week resulting in slight street flooding.

MILLBROOK ROUND TABLE, June 29

Heavy rains and subsequent flooding in the Millbrook area last Thursday night, June 22, caused extensive water damage and have triggered at least half a dozen legal actions or complaints. In one home the water was reported to have been 10 to 12 inches deep in the kitchen and living room.

USWB STORM DATA AND UNUSUAL WEATHER PHENOMENA, June 23

Heavy rain of up to 1.5 inches in less than 2 hours caused extensive flooding of streets, low-lying areas, and basements on Eastern Long Island. Severe washing and erosion of bare sloping areas deposited mud on yards and streets.

July Floods

UTICA PRESS, July 3

A second day of heavy rains flooded Utica streets yesterday. Water lapped over curbs on Genesee Street and covered parts of the Thruway.

USWB STORM DATA AND UNUSUAL WEATHER PHENOMENA, July 3-4

A cloudburst of nearly 3.0 inches of rain within a few hours caused widespread flooding in various sections of the metropolis. More than 500 homeowners in Brooklyn and Queens reported flooded basements. The new Metropolitan Opera and other theaters at Lincoln Center, Manhattan, were damaged by flooding.

MAMARONECK TIMES, July 3

A heavy rainfall early today drenched Westchester County and caused some flash floods on the parkways.

NEW YORK TIMES, July 4

Early morning cloudbursts flooded highways and streets here yesterday, disrupting subway service and snarling rush-hour traffic.

USWB STORM DATA AND UNUSUAL WEATHER PHENOMENA, July 11

Heavy local rains of 3.5 to 4.0 inches in the Boston-Wales-Colden area of southern Erie County caused extensive washing of secondary roads and flooding of property. Many acres of ripe grain were flattened by rain and wind.

JAMESTOWN POST JOURNAL, July 11

Steady rains overnight brought scattered flooding of stores and homes in the Jamestown area. Forty thousand square feet of floor space at the Jamesway Discount Store in Lakewood was covered with as much as 4 inches of water this morning.

PENN YAN CHRONICLE EXPRESS, July 13

A heavy thunderstorm, at times reaching cloudburst proportion, dumped nearly 2 inches of rain on Yates County and the Penn Yan area Tuesday afternoon. Streets and highways in the region were temporarily inundated. Some damage to gardens and lawns was reported.

PENFIELD REPUBLICAN, July 27

A torrential storm Wednesday the 19th dumped as much as 1 1/2 inches of rain within 20 minutes in Penfield. Several cellars and streets were flooded.

JAMESTOWN POST JOURNAL, July 21

A heavy thundershower last evening caused considerable flooding of streets, stores, and basements of homes in Jamestown, Lakewood, Kennedy, and Falconer.

USWB STORM DATA AND UNUSUAL WEATHER PHENOMENA, July 21

Intense local rains caused considerable damage and washout of railroad tracks and right-of-way at Silver Lake, Wyoming County.

MIDDLETOWN RECORD, July 29

An inch and a half of rain in 45 minutes at Middletown washed out streets, flooded cellars, sewers, and the Orange County Fair yesterday and endangered the onion crop.

LONG ISLAND DAILY PRESS, July 29

Heavy rain yesterday flooded some streets at Jamaica and at other spots on Long Island.

NEW PALTZ NEWS, August 3

The village of Highland was hit by a 3-inch rainfall within a 3-hour period last Friday afternoon, flooding several streets to a depth of 3 feet.

SYRACUSE HERALD JOURNAL, July 31

City Department of Public Works crews were on the cleanup brigade today after rainwater flowed down West Seneca Turnpike, Syracuse, Saturday night, July 29, inundating lawns, driveways, and sidewalks. A series of cloudbursts brought on the deluge and a clogged storm drain at Hopper Brook was blamed for the flooding.

August Floods

ALBANY KNICKERBOCKER NEWS, August 1

Three thunderstorms which hit the Albany area overnight caused considerable damage from lightning strikes and temporary flooding of streets from a quarter of an inch rainfall.

ROME SENTINEL, August 2

Over half an inch of rain in less than 30 minutes caused minor street flooding in Rome yesterday.

SYRACUSE POST STANDARD, August 4

Street, highway, and parking lot-flooding in the Syracuse area was reported due to the electrical storms last night.

HORNELL TRIBUNE, August 3

Almost all the campers at Kanakadea Park camping grounds got wet early today, a few lost gear, but no one was injured when the area was flooded by heavy thunderstorms.

CORNING LEADER, August 3

Several feet of water flooded an underpass in Corning, and minor flooding of streets in Corning and Painted Post was reported following a series of violent storms.

JAMESTOWN POST JOURNAL, August 4

Weather-weary Chautauqua County residents were recovering today from the second straight night of battering by a series of electrical storms accompanied by torrential rains. The measured rainfall in a period of less than 48 hours was 4.76 inches. Power interruptions, flooding of basements, and washed-out lawns and driveways were reported in many places with the village of Randolph especially hard hit.

RANDOLPH REGISTER, August 9

Village employees were still working today on the cleanup job left in the wake of the floods last Friday, August 4, when Battle Creek, better known as Dry Brook, went on a rampage about 6 a.m. pouring torrents of water down Center, New, Washington, Jamestown, and Church Streets in Randolph. The biggest threat was to the Van Slyke Nursing Home. A tree lodged in the stream formed a dam which diverted the water across the lawn and parking lot. Sandbags piled across the lawn prevented most of the water from entering the basement.

Route 17 was closed for a time in the village. Residents of the several flooded streets awoke in many cases to find their homes entirely surrounded by water. Between 30 and 40 homes were flooded with some basements filled with water up to the first floors. Other houses and the Episcopal Church had water over the tops of their furnaces.

CANASTOTA BEE JOURNAL, August 10

Friday morning's, August 4, torrential downpour caused flooding in many village homes in Canastota and to some muckland crops, as sewers and drainage ditches failed to carry off the sudden deluge.

POUGHKEEPSIE JOURNAL, August 5

Some light flooding of farmland and other low rural areas in the eastern part of Dutchess County was reported today by the County Flood Commission.

USWB STORM DATA AND UNUSUAL WEATHER PHENOMENA, August 5

A woman was drowned in the backyard of her home at Great Kills on Staten Island. Heavy, intense showers of up to 2 inches within a few hours caused widespread flooding in the City of New York.

BROOKLYN HOME REPORTER, August 11

The rainstorm which struck the metropolitan area last Saturday night, August 4, caused a great deal of damage, much flooding, and inconvenience to people in the Bay Ridge area in Brooklyn. Belt Parkway was blocked off to traffic for quite a distance, necessitating the detour of motorists coming from Staten Island across the Verrazano Narrows Bridge.

YONKERS HERALD STATESMAN, August 7

A downpour of rain of 2.14 inches hit Yonkers Saturday night, flooding some highways and cellars. Some homes were troubled with mud pouring into their basements.

MIDDLETOWN RECORD, August 10

Water filled the streets of Warwick and other communities in Orange and Sullivan Counties last night when more than half an inch of rain fell in this area.

SUFFOLK SUN, August 26

Nearly 2 inches of rain fell on Suffolk County's west end yesterday morning, flooding some roads and slowing traffic on many highways to a crawl. Flooding was reported on many county parkways.

USWB STORM DATA AND UNUSUAL WEATHER PHENOMENA, August 27

Intense thundershowers occurring mainly between 2 p.m. and 6 p.m. caused flooding of streets, subways, expressways, and low-lying areas of the New York City area. Subway service was halted on some lines for several hours as highway traffic was slowed and commercial airlines delayed.

September Floods

USWB STORM DATA AND UNUSUAL WEATHER PHENOMENA, September 27-29

A cold front moving slowly eastward on the evening of the 27th became stalled over the Genesee River basin on the morning of the 28th, following which waves or low pressure centers moved northward along the front until late hours of the 28th. Precipitation continued into the early morning of the 29th and was very heavy during the 24- to 28-hour period ending with late evening of the 28th. Heaviest storm totals of 4.5 to 6.0 inches were recorded in adjoining halves of Cattaraugus and Allegany Counties with an extension northward into the mid-Genesee River valley; an unofficial measurement of 8.0 inches was made near Olean.

Floods quickly developed, particularly along the Allegheny River and its tributaries. Some 90 families were evacuated from homes in Olean, Salamanca, and Friendship. Flood crest on the Allegheny River was third highest of record. Flood waters destroyed 1 railroad and 16 highway bridges in Cattaraugus County alone, inundated city streets, especially in the city of Salamanca, and closed industries and schools. Many highways were washed out. Two people missing in flooded area are presumed dead. Flood crest at mouth of Cattaraugus Creek destroyed boat docks and swept 150 pleasure boats into Lake Erie; many boats later recovered.

Heavy rains in Erie, Niagara, Orleans, and Genesee Counties resulted in light flood damage to property, but inundation of agricultural lands caused significant crop losses, especially to potato and vegetable crops in Elba muck area of Genesee County.

MEDINA JOURNAL, September 28

Steady rain drenched Medina for 24 hours and over 2 inches fell. Conditions were not serious except that a few streets were flooded and some basements may have water in them.

SALAMANCA REPUBLICAN PRESS, September 29

Certainly the fastest and perhaps the worst flood in the history of Salamanca smashed into the city Thursday night.

The rampaging Allegheny River, which surged up nearly 13 feet in 24 hours, forced at least 50 families to leave their homes. It rose 4 feet above flood stage and was still rising in the afternoon.

Damages are expected to run into thousands of dollars in the city. Basements in business places along Main Street near the river were flooded today with up to 4 feet of water. (See photos, figures 6 and 7.)

Surging flood waters in Cattaraugus County today appeared to have claimed one life, as well as causing an estimated damage of one million dollars to county highways and bridges, and toppling a B & O Railroad bridge into Great Valley Creek. (See photos, figures 8, 9, and 10.)

The search continued today for a 17-year old boy from Little Valley, missing since he disappeared in the swirling floodwater of Great Valley Creek at Great Valley. It appeared that the youth drowned when he lost his hold on a utility pole just before rescuers could reach him with the extended bucket of a high-lift road machine. His companion higher on the pole was rescued. Both boys climbed the pole after their car plunged into the flood waters from Route 219.

ROCHESTER DEMOCRAT CHRONICLE, September 29

There were many reports of flooded basements, overworked storm sewers, and partial flooding of some streets yesterday at Batavia.

OLEAN TIMES HERALD, September 29

Towns reporting floods in Cattaraugus County include: Allegany.--Some streets were flooded but business was mostly normal. Central school was closed. Cleaning flooded basements and soaked lawns was the chore of the day. Ellicottville.--Several families were evacuated from their homes at the northeast end of the village. Roads south to Salamanca were closed by flooding. Franklinville.--This village which was isolated for a time Thursday night was returning to normal. Little Valley.--Situation here was described as good despite flooding Thursday night and a power failure. Route 353 to Cattaraugus was closed. Olean.--This city began to dry out today from the worst downpour of rain since the 1942 flood. Although the local officials spent anxious moments on the alert Thursday, most of the city remained safe behind the dikes on the banks of Olean Creek and the Allegheny River. Hundreds of cellars in homes and businesses had water in them but for the most part damage was slight. Salamanca.--A state of emergency was declared in this, the hardest hit community of the region. The Allegheny River continued to climb toward a record level and cresting was not expected until mid-evening. Schools were closed.

Towns in Allegany County also reported flooding: Friendship.--Residents were boiling water, and some 30 persons were evacuated from low-lying Sunnyside-South Street areas. Central school was closed. Cuba.--Cuba Lake rose to its highest level in the memory of local residents for this time of year and caused excessive lakeside damage. Village flooding occurred. Belfast.--Work on the Genesee River project to protect Route 19 from erosion was stalled and maybe retarded by the storm. Cellars of homes were flooded. Bolivar.--Main Street merchants sustained losses as water flooded cellars. One family was evacuated from its home. Fillmore.--Route 19A north of Rosburg was the only state highway still closed today.

BUFFALO EVENING NEWS, September 29

A total of 4.38 inches of rain fell in the Buffalo metropolitan area. The 24-hour fall of 3.63 inches set a new record for September. In Olean

the 5.68-inch rainfall in 24 hours set a 25-year record. The town of Colden was hardest hit in Erie County with families evacuated along the banks of Cazenovia Creek in the West Falls-Colden-Glenwood area. A truck was found in the swollen Cazenovia Creek off Route 240 this morning and the Sheriff's Department stated that its owner, a resident of Colden, had been missing since Thursday night. At Buffalo Scajaquada Creek neared flood stage and then dropped when the rain ended. Some basements and viaducts were flooded. At Amherst as many as 25 basements were flooded and one family was moved to a motel for the night. In Cheektowaga a Buffalo fire department pumper was used to clear the basement of a Children's Home and a few streets were flooded. At Evans, Tonawanda, East Aurora, and West Seneca there were scattered incidents of basement flooding. At Orchard Park a roadbank caved in along the Jewett-Holmwood Road.

BUFFALO COURIER EXPRESS, September 29

The cellars of thousands of homes and business places throughout the eight-county western New York area were flooded by the heavy rains.

In the village of Friendship, 20 of the 25 families in the South Street-Sunnyside area had to evacuate their homes. Seven to eight feet of water was reported to be in the basements of Main Street business places. The roaring water of Van Campen Creek splashed over a 15-foot dike, flooded Island Park and flowed into streets and cellars. A Cattaraugus County Sheriff's Department spokesman said that almost all roads in the town of Lyndon were under water. Some streets in Gowanda were flooded. Many major roads were temporarily closed.

The Acme Electric Company with plants in Cuba, Allegany, and Hinsdale reported all damaged by flood waters and would be closed at least for today.

ROCHESTER TIMES UNION, September 29

Torrential rains caused minor flooding and power failures throughout the Greater Rochester area last night.

In Albion two fire department pumpers and a portable pump fought a losing battle trying to empty dozens of cellars flooded by rains early yesterday afternoon. Most of the main village arteries were covered with water, in some sections more than a foot deep.

NIAGARA FALLS GAZETTE, September 29

Niagara County escaped with only a few scattered reports of flooded underpasses and cellars, but in the city of Lockport, three emergency crews worked throughout the night in several sections of the city.

HORNELL TRIBUNE, September 29

In Friendship, one of the hardest hit communities, they are measuring events yesterday in terms of "the first flood" and "the second flood." (See hydrograph figure 3.)

Water in Van Campen Creek rose rapidly about 1 p.m. yesterday, causing a break in the water main and flooding the Friendship Central School. The rain continued in torrents and by early evening Friendship was experiencing the second flood of the day. It rained so hard firemen were unable to keep up with the water inundating cellars. About 90 percent of the homes in the southern section of the village were flooded.

In Belmont firemen were pumping out cellars this morning. The railroad underpass south of Holley was flooded. In Kendall and Lyndonville some cellar flooding was reported. Water was curb deep in the Allegany County towns of Cuba and Richburg yesterday, flooding several sections and threatening to inundate business places.

SALAMANCA REPUBLICAN PRESS, September 30

Salamanca today began a massive cleanup as the flooding Allegheny River continued to drop after cresting at 1,373.95 feet above sea level, nearly 4 feet over flood stage. The peak fell short of the city's flood of March 1956 when the river reached 1,374.58 feet.

OLEAN TIMES HERALD, September 30

A tractor-trailer truck loaded with canned goods was swept off Route 17 near Salamanca's east city limits late Thursday night by the water from Great Valley Creek. The driver was forced to perch on top of the trailer for 3 hours until he was rescued.

At Salamanca the basement of the City Hall and adjacent fire station were still flooded today. There were boats in front of the fire station instead of the usual trucks. There was no damage to city equipment, although 4 feet of water filled the City Hall basement.

BUFFALO COURIER EXPRESS, September 30

Assistant fire chief Schwab of Salamanca is recovering in District Hospital after spending Thursday night in a tree surrounded by the water of the swollen Allegheny River. He and another fireman had gone to the aid of a Killbuck couple who had been swept into the river in their camper trailer as they were driving west on Route 17 at Killbuck. Two other men had shoved a small boat into the river in an attempt at rescue. Their boat was soon swamped leaving four people in the river hanging to trees and bushes to keep afloat. The fire chief and fireman brought the Killbuck couple to shore, but when they set forth again to rescue the first two men, their boat also

capsized. Being nearer the shore, one of the men was pulled from the water about midnight. Later, another boat was able to pick up two more of the men, but the motor failed before they could reach the assistant fire chief. He had been pinned to a tree by his overturned boat, but finally managed to climb the tree where he stayed for about 8 hours.

At approximately 7 a.m., the assistant fire chief was rescued from the tree and the three men who had spent the night in the sheriff's disabled boat were brought to shore. The chief and two other men were taken to the hospital for treatment for exposure, bruises, and shock.

ROCHESTER DEMOCRAT AND CHRONICLE, September 30

The Greater Rochester area escaped lightly from the heavy rains. There was the inevitable flooding in Livingston County's Canaseraga Creek flats, but there were no reports of any planted cropland being inundated. The flooded areas were the same as those covered by high water every spring.

Sugar Creek in Ossian Center overflowed into the basements of two homes there, and in Wyoming County, the Arcade and Attica Railroad was washed out in several places.

BUFFALO COURIER EXPRESS, October 1

At Sunset Bay damage caused by the rampaging Cattaraugus Creek Thursday night and Friday will probably exceed \$50,000 according to marina operators and area residents. Salvaging operations were continuing for the second day scouring Lake Erie for drifting craft. An estimated 130 to 150 boats from small runabouts to large cabin cruisers were swept into the lake when the floating docks to which they were tied were torn from their anchorages along the creek banks. It was estimated that 40 to 50 of the boats were either wrecked or sunk.

RANDOLPH REGISTER, October 4

For the second time in less than 2 months Randolph and East Randolph firemen, village, town, and county employees and many volunteers worked into the night Thursday to hold back the rushing water of Battle Creek from the Van Slyke Nursing Home. There were several tense moments when the water came pouring over the sandbag wall but workers rushed to build it higher and kept the stream under control.

SARDINIA CENSOR, October 4

The Delevan volunteer firemen were kept busy responding to calls from residents whose cellars were flooded. As much as 3 feet of water was reported in several homes. The basement walls of two homes outside the village caved in from the pressure of water. The bridge over Cattaraugus Creek on Mill Street was washed out.

HAMBURG SUN, October 4

Flooding in Hamburg consisted of a few cellars which needed pumping.

CUBA PATRIOT, October 4

Damage from last week's flooding in the Cuba area hit first and most severely at the Farnsworth Cookie plant at South Cuba. One wall of the new addition gave way after the torrent had reached a height of 5 1/2 feet against it. Severe damage to equipment and materials was caused by 3 feet of water flowing through the plant. Flood water on most streets filled many basements.

On Cuba Lake, docks were washed away, boat houses collapsed, boats were set adrift, and cottages were damaged.

FILLMORE OBSERVER, October 4

Rural routes and farm access roads in places near Belfast were closed Thursday night. Street flooding was general along with many wet cellars.

ELLCOTTVILLE POST, October 4

Cleanup operations are continuing in the wake of the worst flood in the history of Ellicottville. Rain last week dumped more than 5 inches of water on the area causing streams to rise steadily. Water poured over the streambanks early Thursday evening, inundating a major portion of the village. Many residents of Elizabeth, East Washington, and Monroe Streets were evacuated from their homes by high-lifts and boats. The water reached the 3-foot level on the first floors of some homes.

FRANKLINVILLE SENTINEL, October 5

Ischua Creek's overflow created a lake over the Franklinville golf course. One manufacturing plant suffered considerable damage.

ROCHESTER DEMOCRAT CHRONICLE, October 6

Mount Morris Dam on the Genesee River is credited by the U.S. Army Corps of Engineers with preventing \$1,650,000 damage from last week's storm in Greater Rochester. The pool behind the dam rose 70 feet during the 48-hour period beginning at 5 p.m. September 28. At the peak of the rise the water was still 80 feet below the crest of the dam.

JAMESTOWN POST JOURNAL, October 6

Cattaraugus County has been declared a disaster area by the U.S. Small Business Administration. This designation allows individuals or businesses to borrow money at 3 percent interest for up to 30 years.

BUFFALO EVENING NEWS, October 6

Allegany County Agriculture Stabilization Conservation officials, at a meeting Thursday, agreed to seek federal funds for farm losses due to floods last week.

The head of the agency in Belmont said that damage had been estimated to be in excess of \$300,000 to county farmers. This amount is not only for damage to farmland along the streams but, at least, 25 percent of the oat crop and 10 percent of the corn crop cannot be harvested. Considerable countywide damage to farms was caused by gravel and debris swept onto the fields.

SALAMANCA REPUBLICAN PRESS, October 7

An estimate of damage to public facilities in Cattaraugus County from the recent flood totaling \$1,256,598 was given to the Western Director of State Civil Defense Friday afternoon by the chairman of the County Board of Supervisors. He estimated that damage to private property would be three times the amount of the public loss.

OLEAN TIMES HERALD, October 7

Allegany County formally declared itself in a "state of emergency" because of last week's floods which caused an estimated loss of \$594,263 to public and \$300,000 to farm property. In public property loss the hardest hit political subdivision in the county was the village of Friendship which reported a loss of \$150,000.

LOCKPORT SUN JOURNAL, October 31

The Allegany-Cattaraugus County area of Western New York was declared a major disaster area by President Johnson who has allocated \$300,000 for emergency recovery work.

October Floods

USWB STORM DATA AND UNUSUAL WEATHER PHENOMENA, October 10

Afternoon and early evening storm, which intensified and yielded up to 0.48 inch per hour near the rush hours in New York City, caused extensive

traffic jams, especially in North Queens. A six-block section of street was closed when temporary landfill caved in, trapping a bus and six autos.

BUFFALO COURIER EXPRESS, October 19

Heavy rain since Tuesday brought flood threats for the second time in 3 weeks in Erie and Allegany Counties last night. Smokes Creek overflowed two coffer dams in a flood-control project in Lackawanna, and the partially repaired Moss Brook Street bridge in Friendship, Allegany County, was washed out again by Van Campen Creek. The village park was also again flooded through breaks in a retaining wall.

USWB STORM DATA AND UNUSUAL WEATHER PHENOMENA, October 18, 19

Widespread heavy rains in eastern Finger Lake region with 2.27 inches at Ithaca, the heaviest storm total there since June 1966, caused minor flooding.

THE ITHACA JOURNAL, October 19

The heaviest local rainfall in 15 1/2 months battered the Ithaca area yesterday with scattered flooding reported.

USWB STORM DATA AND UNUSUAL WEATHER PHENOMENA, October 25

Heavy showers totaling up to 1.4 inches in 4 hours today resulted in minor flooding at numerous intersections in New York City.

November Floods

BINGHAMTON PRESS, November 3

Between midnight Wednesday and midnight Thursday 2.10 inches of rain was measured at the Broome County Airport near Binghamton. Many small creek bridges were weakened and one at Windsor was knocked out completely.

SYRACUSE HERALD JOURNAL, November 3

Yesterday's rainfall of a little over 2 inches at Syracuse flooded many cellars in the city and in outlying areas.

December Floods

NEWBURGH BEACON NEWS, December 13

The 1.7 inches of rain that fell on Middletown Monday night and Tuesday brought lots of trouble to property owners on Smith Street and the surrounding area. Most cellars in the vicinity were flooded to their ceilings when Draper Brook could not handle the runoff.



Figure 6.--Allegheny River overflowing Sycamore Avenue, just west of City Hall, Salamanca, N. Y.
(Photo courtesy of Salamanca Republican Press)



Figure 7.--Part of business district in Salamanca, N. Y. City Hall in upper left part of photo;
U.S. Geological Survey gaging station in upper center.
(Photo courtesy of Buffalo Evening News)



Figure 8.--B & O Railroad bridge dropped into Great Valley Creek north of Salamanca, N. Y.
(Photo courtesy of Buffalo Evening News)



Figure 9.--B & O Railroad bridge dropped into Great Valley Creek north of Salamanca, N. Y.
(Photo courtesy of Buffalo Evening News)



Figure 10.--Typical highway damage, Route 219 between Salamanca and Great Valley, N. Y.
(Photo courtesy of Salamanca Republican Press)